



Behind the Screen: How Gaming Habits, Motives, and Content Shape Cyberbullying Behaviour

Yunhao Hu^{1,3} · Elizabeth M. Clancy^{1,2,3} · Bianca Klettke^{1,2,3}

Accepted: 18 July 2025
© The Author(s) 2025

Abstract

This study explores how gaming motives, gaming frequency, and exposure to violent content collectively predict cyberbullying perpetration in online multiplayer games. A cross-sectional survey was conducted with 608 cisgendered participants (M age = 24.94; SD = 4.52, 72.2% men). Sequential logistic regression found that gaming frequency was the strongest predictor of cyberbullying, followed by competitive motives, gender (men), and younger age. Interestingly, exposure to violent content did not significantly predict cyberbullying. Findings suggest that habitual gaming with competitive motives may encourage cyberbullying perpetration, potentially as a means to gain a gameplay advantage. Results also highlight the higher prevalence of cyberbullying among younger men, suggesting a need for early interventions that target gender norms in gaming. Finally, the non-significant impact of violent content may be due to desensitization. Future research should examine the role of gaming motives across different game genres and investigate the relationship between violent content exposure and aggression in gaming.

Keywords Digital gaming · Cyberbullying · Violent content · Motivations · Computer games · Bullying · Game

Introduction

The widespread accessibility of gaming consoles and multiplayer online games has contributed to a large and growing community of gamers worldwide (Billieux et al., 2013; Brand & Jervis, 2021). As of 2024, there are approximately 2.6 billion gamers globally, with this number expected to rise by 15.3% by 2027 (Statista, 2024a); about 1.17 billion engage in online gaming, indicating that 45% of gamers worldwide participate in online games, with the average gamer aged 34 years old (Brand et al., 2019; Statista, 2024b). Modern gamers are increasingly socializing in

online multiplayer games (Anderson et al., 2017; Domahidi et al., 2014; Gottfried & Sidoti, 2024; Griffiths et al., 2004; Trudgett-Klose & McLinton, 2024), the benefits of which extend beyond entertainment. For example, a systematic review of 18 studies revealed a significant relationship between playing multiplayer online games and social well-being, including improved self-esteem and reduced loneliness (Raith et al., 2021). Further, online gaming has been found to strengthen friendships, foster a sense of community (Brand & Jervis, 2021; Domahidi et al., 2014; Sublette & Mullan, 2012), and alleviate symptoms of stress, anxiety, and depression (Boldi & Rapp, 2022; Kowal et al., 2021; Pallavicini et al., 2022; Raith et al., 2021).

While social connections formed within video games have the potential to positively influence mental health, they can also facilitate harmful behaviours common to other social online platforms, such as cyberbullying (Adachi & Willoughby, 2011; Ballard & Welch, 2017; Coyne et al., 2023; Ferguson et al., 2008; López-Fernández et al., 2021). To date, research on predictors of cyberbullying in online games have not considered gaming motivations. To address this gap, this study explores how gaming frequency, exposure to violent content, and gaming motives relate to cyberbullying. Specifically, it identifies which gaming motives

✉ Yunhao Hu
houson.hu@deakin.edu.au

Elizabeth M. Clancy
elizabeth.clancy@deakin.edu.au

Bianca Klettke
bianca.klettke@deakin.edu.au

¹ School of Psychology, Deakin University, Burwood, Australia, VIC

² SEED Lifespan, Burwood, Australia

³ Deakin Cyber, Burwood, Australia

contribute to in-game cyberbullying and examines whether competitive motives explain the link between violent content exposure and cyberbullying. The findings aim to inform researchers and policymakers on fostering healthier gaming environments.

Cyberbullying

Cyberbullying is commonly understood as the use of technology to harass, embarrass, or hurt someone. However, there is a lack of clear definition in scientific literature, posing significant challenges for researchers aiming to understand its nature and compare findings (Jenaro et al., 2018; Kwan et al., 2020). To provide a broad definition consistent with a range of aggressive online behaviours, the present research adapted from Smith et al. (2008) and operationalised cyberbullying as: "an intentionally aggressive or harmful act conducted by an individual or group through digital means against victims who cannot easily defend themselves".

Research on cyberbullying in gaming environments has found varied rates of perpetration and victimization, similar to those observed in general cyberbullying behaviours on social media (Brochado et al., 2017; Kowalski et al., 2019; Kwan et al., 2020). Among adolescents, reported victimization rates during online gaming range from 21.8% to 47.3%, while perpetration rates range from 21% and 31.2% (Çimen et al., 2024; Huang et al., 2019; Leung & McBride-Chang, 2013; Tippet & Kwak, 2012). For adults, cyberbullying victimization rates range from 55.26% to 66% (Ballard & Welch, 2017; Cole et al., 2020; Wong & Ratan, 2024), while perpetration rates are reported at 35% (Ballard & Welch, 2017). Sample differences may have contributed to variations in reported cyberbullying rates during online gaming. For example, experienced gamers, often accustomed to aggressive exchanges known as "trash-talking" may not perceive or report abusive behaviours as bullying (Kaye et al., 2022; McInroy & Mishna, 2017).

Though definitions and prevalence rates of cyberbullying vary across studies, findings regarding potential outcomes remain consistent. Cole et al., (2020) found that positive health outcomes of online gaming, such as reductions in stress, anxiety, and depression, were moderated by the presence of cyberbullying. Additionally, gamers have reported lower levels of friendship satisfaction while playing online games, and experienced annoyance, anger, and offense in response to cyberbullying victimization (Fryling, 2018; Leung & McBride-Chang, 2013; Li & Pustaka, 2017).

Further, prior studies have found associations between cyberbullying in online games and harmful psycho-social consequences, such as decreased self-esteem and increased stress, anxiety, and depression (Cole et al., 2020; Fryling et al., 2015; Zsila et al., 2022), with symptoms potentially culminating in suicidal ideation and attempts (Achuthan et al., 2023; Bottino et al., 2015; John et al., 2018). Notably, due to the bidirectional nature of cyberbullying behaviours, both victims and perpetrators may experience symptoms of mental illness and social impairment (Ballard & Welch, 2017; Fox et al., 2018; Fryling et al., 2015; Hidayat et al., 2022; Leung & McBride-Chang, 2013; Tippet & Kwak, 2012).

Theoretical Basis

The current study is guided by Uses and Gratifications Theory (Katz et al., 1973) and Social Dominance Theory (Espelage et al., 2013). Uses and Gratifications Theory suggests that media users actively seek out specific media to fulfill their needs and desires (Katz et al., 1973). Prior research on online aggression utilizing this theory has found that individual differences in personality and motives, such as narcissistic personality traits and dominance motives, can predict cyberbullying perpetration (Tanrikulu & Erdur-Baker, 2021).

Within the context of online gaming, player behaviours can vary by game genre (Greitemeyer & Cox, 2013; Lisón et al., 2015; Zsila et al., 2022). For instance, gamers who played competitive games were more likely to experience toxic behaviours (Zsila et al., 2022). Given that gaming motives influence game genre preferences (Sherry et al., 2006), they may similarly predict the likelihood of engagement in cyberbullying behaviour. Thus, beyond dominance motives identified in previous literature, individual gaming motives may offer further insight into the likelihood of cyberbullying perpetration in online gaming.

Social Dominance Theory suggests that aggression is used by individuals to maintain rank, status, or power within a social hierarchy (Espelage et al., 2013). Within the context of online gaming, research has shown that cyber-aggression is associated with factors such as game rank, competitiveness, team conflict, and endorsement of social inequality (Ballard & Welch, 2017; Kou, 2020; Tang & Fox, 2016; Tang et al., 2020). Furthermore, players who spend more time in competitive games have been found to be more frequently exposed to cyberbullying (Zsila et al., 2022). As gaming motives influence how players interact within these environments, competition-driven motives may foster cyberbullying perpetration as a strategy for asserting or defending social status.

Cyberbullying Predictors in Online Gaming

Prior research has identified several key predictors of cyberbullying behaviours in online games. For example, gender is strongly associated with cyberbullying, with men more frequently identified as both perpetrators and victims (Fryling, 2018; Fryling et al., 2015; Hilvert-Bruce & Neill, 2020; Huang et al., 2019, 2021; Kowalski et al., 2012; Tippet & Kwak, 2012). Moreover, women and LGBT gamers experience higher rates of sexual harassment while gaming (Ballard & Welch, 2017; Trudgett-Klose & McLinton, 2024). Age is negatively associated with cyberbullying in adults, suggesting that older players are less likely to engage in cyberbullying while gaming (Hilvert-Bruce & Neill, 2020; Mattinen & Macey, 2018). Frequent online game use is also predictive of both cyberbullying perpetration and victimization in online games (Cole et al., 2020; Hidayat et al., 2022; Hilvert-Bruce & Neill, 2020; Huang et al., 2021; Tang & Fox, 2016). This association is expected, as increased gaming frequency represents greater exposure to the gaming environment, which can normalize experiences such as cyberbullying.

Prior research found a positive association between exposure to violent online games and both cyberbullying perpetration and victimization on general social media platforms (Chang et al., 2015; Hidayat et al., 2022; Hou et al., 2022; Lam et al., 2013; Li, 2022). Additionally, meta-analyses have indicated that violent video game exposure promotes aggressive behaviour and reduces pro-social behaviour (Burkhardt & Lenhard, 2022; Mathur & VanderWeele, 2019).

However, the impact of violent video games on aggression and harmful behaviours remains contentious. Prior research has highlighted that many studies on violent video games and aggression overlook variables such as competitiveness, level of difficulty, and pace of action, which could be contributing factors for online aggression (Adachi & Willoughby, 2011). Longitudinal data has also found that individuals who play violent games are more likely to be exposed to risk factors such as parental hostility and deviant peers, which may have greater predictive validity in explaining the development of aggressive behaviours compared to violent content exposure (Coyne et al., 2023; Ferguson et al., 2008; López-Fernández et al., 2021; Shao & Wang, 2019). These findings highlight the importance of examining violent content exposure alongside other variables in cyberbullying research.

Finally, research has found that adolescent gamers value performance, competition, and achievement, qualities which characterize gaming culture and could potentially contribute to cyberbullying behaviours (McInroy & Mishna, 2017; Waechter & Meschik, 2023). In competitive gaming environments, gamers tend to develop strong

in-group and out-group identities, which may facilitate the cyberbullying of out-group members (Ballard & Welch, 2017; Kwak & Blackburn, 2015). The pursuit of victory and motivation to outperform rival teams can lead to conflicts that escalate into online harassment (Ballard & Welch, 2017; Kou, 2020; Kwak & Blackburn, 2015; Waechter & Meschik, 2023).

Gaps in Literature

Despite the growing body of research on cyberbullying in gaming platforms, significant gaps remain in the field. Notably, most studies examine factors such as violent content and gaming frequency in isolation, leaving the unique contributions of each predictor on cyberbullying behaviours unclear. Additionally, research on violent content exposure often focuses on cyberbullying behaviours across general social media contexts rather than within online gaming environments (Chang et al., 2015; Hidayat et al., 2022; Hou et al., 2022; Lam et al., 2013; Li, 2022). This is a critical distinction, as the nature of cyberbullying could vary depending on the medium and context in which it occurs.

Finally, while Uses and Gratifications Theory (Katz et al., 1973) suggests that motives for engaging with specific media may predict cyberbullying perpetration (Tanrikulu & Erdur-Baker, 2021), to the authors' knowledge, there are currently no studies addressing the relationships between gaming motives and cyberbullying within online gaming. Addressing these gaps could help researchers develop a more accurate understanding of the antecedents of cyberbullying in online games.

Research Aims and Hypotheses

To address gaps in the literature, this study aims to examine the association between gaming frequency, violent content exposure, gaming motives, and cyberbullying perpetration, while controlling for demographic variables (gender, age).

Based on prior literature, it is hypothesised that higher rates of gaming frequency and exposure to more violent content will predict cyberbullying perpetration in online games (Hypothesis 1). Grounded in Social Dominance Theory (Espelage et al., 2013), competitive gaming motives are expected to be positively associated with cyberbullying perpetration in online games (Hypothesis 2). Expanding on Adachi and Willoughby's (2011) findings, it is hypothesized that competitive motives will account for the variance in cyberbullying perpetration explained by exposure to violent content (Hypothesis 3). Finally, drawing on Uses and Gratifications Theory (Katz et al., 1973), this study explores whether additional gaming motives such as challenge, social interaction, diversion, fantasy, and arousal are linked to cyberbullying perpetration. Given the limited research in this area, this analysis remains exploratory, with no specific hypotheses proposed.

Methods

This study utilised a cross-sectional design to explore relationships between gender, age, gaming frequency, violent content exposure, gaming motives, and cyberbullying perpetration in online games.

Participants

Participants were recruited during two separate survey waves conducted between 2023 and 2024 regarding online behaviours. Of the 1954 participants who commenced the survey, 710 participants were removed due to incomplete items that were resilient to imputation (e.g., gaming frequency), and 12 gender diverse participants were removed due to insufficient sample size for analysis, resulting in an initial sample of 1,232 participants (45.9% men, 54.1% women). Subsequently, 624 participants were removed for not having engaged in online multiplayer gameplay within the past year, leaving a final analytical sample of 608 participants (72.2% men, 27.8% women).

Participants were 18–57 years old ($M=24.94$, $SD=4.52$). Over a third held a bachelor's degree (37.9%), while others had completed Year 12 or equivalent (22.6%), a postgraduate degree (13.3%), advanced diploma (10.0%), certificate-level qualification (8.4%), graduate diploma (5.9%), or were still in/did not complete secondary school (1.8%). Most participants were from Australia (50.7%), the UK (27.1%), Canada (10.9%), New Zealand (6.8%), "Other" (3.1%), and the USA (1.3%). Racial/ethnic backgrounds included Australian (34%), British/European (28.8%), Asian (21.1%), and "Other" (16.1%).

Procedure

The study protocol was reviewed and approved by Deakin University's Human Research Ethics Committee (DUHREC). Participants received a plain language statement explaining the study's purpose and provided informed consent before commencing the survey, which took approximately 20–25 min to complete. Of the final analytical sample, 237 (39.0%) respondents were recruited via social media, followed by an additional 371 (61.0%) who were recruited through survey panel aggregator Prolific, with a focus on men for initial sample balance. Social media recruitment was conducted through Facebook, Instagram, and Reddit using snowball sampling methods. Recruitment efforts primarily targeted survey exchange, university, and gaming communities (e.g., r/SurveyExchange). Participation was voluntary and confidential. No financial incentives were provided to participants recruited via social media, while those recruited through Prolific received a minor financial reimbursement upon completion of the survey (~GBP2.50).

On average, participants recruited through Prolific were younger than those recruited via social media (Prolific: $M=24.6$, $SD=3.45$; social media: $M=25.47$, $SD=2.98$; $t(606)=2.34$, $p=0.02$) and were more likely to be men (Prolific: 89.5%; social media: 45.1%; $\chi^2(1)=141.67$, $p<0.001$), reflecting targeted recruitment. Prolific participants also played multiplayer online games more frequently (Prolific: $M=2.98$, $SD=1.39$; social media: $M=2.31$, $SD=1.37$; $t(606)=-5.85$, $p<0.001$), had greater exposure to violent gaming content (Prolific: $M=0.73$, $SD=1.02$; social media: $M=0.46$, $SD=1.04$; $t(606)=-3.21$, $p<0.001$), and were more likely to engage in cyberbullying during online gaming (Prolific: 38.0%; social media: 20.7%; $\chi^2(1)=20.217$, $p<0.001$).

Measures

Gaming frequency was assessed by adapting an existing item used in previous research (López-Fernández et al., 2021): "How often have you played multiplayer online games in the past year?". Response options included: '3 h per day; Between 1–3 h per day; < 1 h per day; Once per week; Once per month; Never'. Participants who reported *Never* were excluded from analyses.

To identify the level of violent video game exposure, a procedure previously utilised by López-Fernández et al. (2021) was adapted for use in the online multiplayer gaming context. Participants reported up to three of their most played online multiplayer games, with violent video game exposure indexed as the average proportion of violent games played, calculated through dividing the sum of PEGI 18 ratings, an industry standard rating system for the appropriateness of game content (Pan European Gaming Information, 2023), by the total number of reported games. All reported PEGI 18 games were checked to verify that their rating was due to violent content. This value was then multiplied by gaming frequency to adjust for exposure to video games, as reflected by the equation:

$$VE = \frac{PEGI18}{N} \times GF$$

Note. VE = violent game exposure, $PEGI\ 18$ = number of PEGI 18 ratings for reported games, N = total number of reported games, GF = Gaming Frequency (coded 1–5 dependent on reported gaming frequency).

Cyberbullying perpetration in multiplayer online games was investigated using an adapted version of the Cyberbullying Perpetration Scale (Ybarra et al., 2007). Due to the scarcity of surveys specifically designed for cyberbullying in online games, a three-item scale (e.g., 'How often have you engaged in these behaviours (*cyberbullying perpetration*) during online gaming in the past year?') was adapted for this context, with cyberbullying perpetration centred around

domains of offensive language and verbal abuse (e.g., ‘In the last year, how many times did you make rude or nasty comments to someone while online?’). Response options include: ‘Everyday/almost every day; Once or twice a week; Once or twice a month; A few times a year; Less than a few times a year; Never’. Participants who reported engaging in any of the behaviours in multiplayer online games within the last year were coded as a cyberbully perpetrator. Responses had an acceptable internal consistency of *Cronbach’s* $\alpha = 0.76$.

Gaming motives were investigated using the Video Games Uses and Gratifications Scale (Sherry et al., 2006). This 20-item scale measured level of participant agreement ($1 = \text{strongly disagree}$; $7 = \text{strongly agree}$) with gaming motivations across various dimensions: *competition*, *challenge*, *social interaction*, *diversion*, *fantasy*, and *arousal* (e.g., I play video games because they excite me). Scores for items across each dimension were summed and standardised, with higher scores indicating stronger endorsement of a particular motive. Internal consistency for the current sample were acceptable to very good: competition (4 items; $\alpha = 0.78$), challenge (4 items; $\alpha = 0.75$), social interaction (4 items; $\alpha = 0.80$), diversion (3 items; $\alpha = 0.89$), fantasy (3 items; $\alpha = 0.86$), and arousal (2 items; $\alpha = 0.81$).

Analysis

All analyses were conducted using IBM SPSS Statistics V29.0. Descriptive statistics were used to explore behaviours across the sample. Chi-square analyses and independent sample t-tests examined gender differences in cyberbullying perpetration, gaming frequencies, violent content exposure and gaming motives. Correlational analyses were conducted for all variables. To maintain model parsimony, gaming motives that did not significantly correlate with cyberbullying perpetration were excluded from subsequent regression analyses. To minimize multicollinearity and

allow for the independent assessment of key predictors, a sequential logistic regression was conducted to examine the relationship between gaming frequency, violent content exposure, gaming motives, and cyberbullying perpetration, while controlling for demographic variables (gender, age). In Step 1, age and gender were entered into the regression model. In Step 2, violent content exposure, and gaming frequency were added. In Step 3, the competition gaming motive was included separately to assess whether the predictive power of violent content exposure is accounted for by competition. Finally, in Step 4, remaining gaming motives were added. Alpha levels for all analyses were set at 0.05, and all relevant assumptions for binomial logistic regression were met.

Results

Descriptive statistics are provided in Table 1. The average gaming frequency was 2.72 ($SD = 1.42$), indicating that overall participants played games between once per week and every day (for less than one hour per day). More than one-third (37.3%) of participants reported playing games rated PEGI 18 (i.e., intended for mature audiences due to violent or explicit content) in the past year. Slightly less than one-third (31.3%) of participants reported engaging in cyberbullying perpetration during online gaming. Regarding gaming motives, the most strongly endorsed motive across the sample was *challenge*, followed by *arousal*, *social interaction*, *competition*, *fantasy*, and *diversion*. Men played online games more frequently, were more than two times as likely to be exposed to violent gaming content, and more than three times as likely to report engaging in cyberbullying compared to women. Additionally, men were more likely than women to be motivated to play games for reasons related to *competition*, *social interaction*, and *arousal*.

Table 1 Key variables by gender

Variable	Full Sample ($N = 608$)	Men ($n = 439$)	Women ($n = 169$)	Comparison, Men to Women
Cyberbullying Perpetration (%)	31.3%	38.5%	12.4%	$\chi^2(1) = 38.60, p < 0.001$
PEGI 18 (%)	37.3%	44.6%	18.3%	$\chi^2(1) = 36.09, p < 0.001$
Gaming Frequency	2.72(1.42)	2.98(1.37)	2.04(1.32)	$t(606) = 7.63, p < 0.001$
Violent Content Exposure	0.63(1.04)	0.75(1.08)	0.32(0.85)	$t(606) = 4.66, p < 0.001$
Motives				
Competition	3.58(1.37)	3.78(1.37)	3.05(1.22)	$t(606) = 6.10, p < 0.001$
Challenge	5.05(1.06)	5.10(1.06)	4.93(1.05)	$t(606) = 1.84, p = 0.066$
Social Interaction	4.85(1.65)	5.09(1.55)	4.23(1.72)	$t(606) = 5.92, p < 0.001$
Diversion	4.07(1.66)	4.09(1.63)	4.05(1.73)	$t(606) = 0.25, p = 0.800$
Fantasy	4.17(1.54)	4.23(1.54)	3.99(1.53)	$t(606) = 1.76, p = 0.079$
Arousal	4.76(1.19)	4.86(1.16)	4.49(1.22)	$t(606) = 3.47, p < 0.001$

Table 2 Correlations for key variables

Variables	Motives									
	Cyberbullying	Age	Gender	Gaming Frequency	Violent Content Exposure	Competition	Challenge	Social Interaction	Diversion	Fantasy
Cyberbullying	1	—	—	—	—	—	—	—	—	—
Age	-0.126**	1	—	—	—	—	—	—	—	—
Gender ¹	-0.252**	0.135**	1	—	—	—	—	—	—	—
Gaming Frequency	0.376**	-0.235**	-0.530**	1	—	—	—	—	—	—
Violent Content Exposure	0.095*	0.042	-0.186**	0.341**	1	—	—	—	—	—
Motives										
Competition	0.345**	-0.151**	-0.241**	0.324**	0.110**	1	—	—	—	—
Challenge	0.189**	-0.009	-0.075	0.300**	0.038	0.522**	1	—	—	—
Social Interaction	0.220*	-0.105**	-0.234**	0.394**	0.118**	0.377**	0.363**	1	—	—
Diversion	0.203**	-0.067	-0.010	0.283**	0.044	0.372**	0.395**	0.291**	1	—
Fantasy	0.134**	0.011	-0.071	0.136**	0.078	0.353**	0.443**	0.212**	0.375**	1
Arousal	0.226*	-0.033	-0.139**	0.334**	0.102*	0.491**	0.629**	0.369**	0.459**	0.560**

* $p < 0.05$, ** $p < 0.01$. ¹Reference category = Men

Correlations

Bivariate correlations were conducted to explore relationships between cyberbullying perpetration, age, gender, gaming frequency, violent content exposure, competition, challenge, social interaction, diversion, fantasy, and arousal (Table 2). Cyberbullying perpetration was negatively correlated with both gender and age, and positively correlated with gaming frequency and violent content exposure. Additionally, all gaming motives were positively associated with cyberbullying perpetration and included in subsequent regression analyses.

Logistic Regression for Hypothesis Testing

A sequential logistic regression was conducted to address both the primary and exploratory hypotheses. It was hypothesized that gaming frequency and exposure to violent content would positively predict cyberbullying perpetration in online games. Additionally, competitive gaming motives were expected to predict cyberbullying perpetration and account for variance explained by violent content exposure. The analysis also explored whether other gaming motives, including challenge, social interaction, diversion, fantasy, and arousal, were associated with cyberbullying perpetration. Results are summarized in Table 3.

In Step 1, age and gender were entered into the model as demographic variables. The model was significant, $\chi^2(2) = 55.32$, $p < 0.001$, $R^2_{\text{Change}} = .073$, and explained 7.3% ($R^2_{\text{LL}} = 0.073$) of the variance in cyberbullying perpetration. Violent content exposure and gaming frequency were entered in Step 2. This significantly improved the model fit, $\chi^2(4) = 12.981$, $p < 0.001$, $R^2_{\text{Change}} = .089$, and accounted for 16.2% ($R^2_{\text{LL}} = 0.162$) of the variance in cyberbullying perpetration. At Step 2, gaming frequency was a significant predictor, $\text{Exp}(B) = 1.80$, $p < 0.001$, while violent content exposure was not, $\text{Exp}(B) = 0.90$, $p = 0.28$. In Step 3, the gaming motive competition, was added. The model was significant, $\chi^2(5) = 150.47$, $p < 0.001$, $R^2_{\text{Change}} = .037$, and explained 19.9% ($R^2_{\text{LL}} = 0.199$) of the overall variance. Step 4 included the remaining gaming motives: challenge, social interaction, diversion, fantasy, and arousal. The model was significant, $\chi^2(10) = 153.22$, $p < 0.001$, $R^2_{\text{Change}} = .004$, and explained 20.3% ($R^2_{\text{LL}} = 0.203$) of variance in cyberbullying perpetration.

The final regression model found that the strongest predictor of cyberbullying perpetration was gaming frequency, $\text{Exp}(B) = 1.65$, $p < 0.001$, followed by competition, $\text{Exp}(B) = 1.50$, $p < 0.001$. Older participants were less likely to engage in cyberbullying perpetration in online games, $\text{Exp}(B) = 0.93$, $p = 0.01$, and men were significantly more likely to engage in cyberbullying compared to women, $\text{Exp}(B) = 0.37$, $p < 0.001$. Finally, violent content exposure and the remaining gaming motives (challenge, social interaction, diversion, fantasy, arousal) did not significantly predict cyberbullying perpetration in online games.

Table 3 Sequential Logistic Regression Results Regarding Cyberbully Perpetration in Online Games¹

Variable	<i>B</i>	<i>df</i>	<i>p</i>	95% CI			<i>R</i> ² _{LL}	<i>R</i> ² _{Change}
				<i>Exp(B)</i>	Lower	Higher		
Step 1							0.073	0.073**
Step 2							0.162	0.089**
Step 3							0.199	0.037**
Step 4							0.203	0.004**
Constant	−1.00	1	0.30	0.37	—	—		
Age	−0.07	1	0.01	0.94	0.89	0.99		
Gender ²	−1.00	1	<0.001	0.37	0.21	0.64		
Gaming Frequency	0.50	1	<0.001	1.65	1.39	1.95		
Violent Content Exposure	−0.11	1	0.25	0.89	0.74	1.08		
Competition	0.40	1	<0.001	1.50	1.24	1.81		
Challenge	−0.13	1	0.35	0.88	0.67	1.15		
Social Interaction	−0.01	1	0.98	0.99	0.86	1.16		
Diversion	0.09	1	0.24	1.09	0.94	1.26		
Fantasy	0.04	1	0.65	1.04	0.89	1.22		
Arousal	0.06	1	0.67	1.06	0.82	1.37		

* $p < 0.05$, ** $p < 0.01$. ¹ Results at Step 1, Step 2 and Step 3 are available on request. ² Reference category = Men

Discussion

This study explored the relationship between gaming frequency, violent content exposure, gaming motives, and cyberbullying perpetration in online games, while controlling for age and gender. Hypothesis 1 received partial support, as gaming frequency strongly predicted cyberbullying perpetration, while violent content exposure did not. Hypothesis 2 was supported, with competitive motives significantly predicting cyberbullying. Hypothesis 3 was not supported, as violent content exposure was not a significant predictor, indicating that competition did not account for its assumed influence. Exploratory analyses found while multiple gaming motives were correlated with cyberbullying, only competition remained a significant predictor in logistic analysis.

Sample Characteristics

Among initial participants ($n = 1232$), less than half reported playing multiplayer online games (49.19%). Younger men played more frequently, suggesting that while gamers are almost equally distributed across binary genders (Statista, 2024c), gender differences remain in the degree of engagement with online gaming. This may be due to women and TGD individuals avoiding social aspects of online gaming due to fears of harassment (Cote, 2017; Fox & Tang, 2017; McLean & Griffiths, 2019). Nearly one-third of participants reported engaging in cyberbullying, with men being three times more likely to perpetrate than women. This is comparable with rates from prior research (e.g., Ballard & Welch, 2017; Huang

et al., 2019; Leung & McBride-Chang, 2013; Tippet & Kwak, 2012), and findings on gender differences in cyberbullying perpetration (Fryling, 2018; Fryling et al., 2015; Hilvert-Bruce & Neill, 2020; Huang et al., 2021; Tippet & Kwak, 2012). Notably, gender remained a significant predictor of cyberbullying even after controlling for gaming frequency, suggesting social norms and group dynamics may contribute to its normalization (Kaye et al., 2022; McInroy & Mishna, 2017; Waechter & Meschik, 2023). Thus, understanding differences across genders when it comes to identification with gaming culture may have implications for understanding cyberbullying behaviour. While qualitative studies have previously investigated how women experience gaming culture (Kuss et al., 2022; Schott & Horrell, 2000), empirical research on gender differences in engagement with gaming culture remains limited, highlighting a potential area for future research.

Consistent with prior findings (Hilvert-Bruce & Neill, 2020), older participants were less likely to perpetrate cyberbullying, suggesting that cyberbullying behaviours tend to decrease as adults get older. This may be due to greater awareness of cyberbullying behaviours among older gamers, as reported in prior research (Mattinen & Macey, 2018). Prevention efforts could benefit from targeted awareness campaigns for younger players to help reduce cyberbullying.

Regarding gaming motives, *challenge* was the most strongly endorsed motive, followed by *arousal*, *social interaction*, *competition*, *fantasy*, and *diversion*, largely consistent with findings from the scale development study by Sherry et al. (2006). Social interaction ranked significantly higher in the current study compared to previous research, likely due to this study's focus on multiplayer gaming.

Concerning gender differences, men were more likely to be motivated by *competition*, *social interaction*, and *arousal* compared to women, suggesting a preference for competitive and interactive gameplay, which may increase cyberbullying risk. Women's lower social motivation for multiplayer games may stem from concerns about gendered harassment (Cote, 2017; Fox & Tang, 2017; McLean & Griffiths, 2019).

Hypothesis 1

Consistent with prior research (Hilvert-Bruce & Neill, 2020; Huang et al., 2021; Tang & Fox, 2016), gaming frequency was found to be strongly associated with cyberbullying, emphasizing the role that habitual gaming may play in enabling problematic online behaviours. Given its substantial influence, gaming frequency should be controlled for as a major confounding variable in future studies examining antecedents of cyberbullying in online gaming.

This study found no significant association between violent content exposure and cyberbullying, possibly because online gamers may be desensitized to violent content, mitigating its influence on behaviour. This contrasts with previous research findings (Burkhardt & Lenhard, 2022; Mathur & VanderWeele, 2019), and the discrepancy may be explained by several factors. First, research on violent content and cyberbullying in online multiplayer games is limited (Hidayat et al., 2022), making meaningful comparisons challenging. Second, prior studies have generally found weak associations between violent content and cyberbullying (Burkhardt & Lenhard, 2022; Mathur & VanderWeele, 2019), with other factors more commonly identified as stronger predictors (Coyne et al., 2023; Ferguson et al., 2008; López-Fernández et al., 2021). Third, unlike most studies in this field, the present study used an objective measure of violent content exposure based on PEGI 18 ratings. The alignment of findings from this study with similar research (López-Fernández et al., 2021) suggest that the predictive power of violent content exposure diminishes when other variables are taken into account. Future research in this area should account for confounding variables, such as gaming frequency, when examining violent content exposure. Additionally, it may be necessary to reassess the portrayal of violent content in video games as a significant driver of aggressive behaviour.

Hypothesis 2

As anticipated, competitive motives were significantly associated with cyberbullying perpetration in online games, aligning with Social Dominance Theory (Espelage et al., 2013), which posits that individuals driven by competition

may use aggressive behaviours to assert dominance. Results also align with previous research linking competitive gaming to hostile online behaviours (Ballard & Welch, 2017; Kou, 2020; Waechter & Meschik, 2023). Notably, this study is the first to explore the role of competitive motives in predicting cyberbullying perpetration. It highlights that players focused on winning and outperforming others may use cyberbullying as a strategy to intimidate others and gain a perceived advantage. Furthermore, player intent may influence cyberbullying behaviour alongside their chosen game genre. This is particularly significant, as some gamers engage with competitive games for non-competitive motives (e.g., seeking a challenge), while others may approach cooperative games with competitive goals (e.g., achieving higher rankings). Future research could further explore how motives influence behaviour across different game genres.

Hypothesis 3

While competitive motives significantly predicted cyberbullying behaviours, they did not explain variance attributed to violent content exposure, as violent content exposure itself was not a significant predictor of cyberbullying behaviour. Research on the link between violent gaming content and cyberbullying in online multiplayer games remains limited. Therefore, future research should examine the impact of violent content exposure on toxic gaming behaviour while accounting for competitive motives as a potential confounder. This could provide deeper insight into the relationship between game content and behaviour.

Exploratory Hypotheses

In line with Uses and Gratifications Theory (Katz et al., 1973), various gaming motives were expected to predict cyberbullying perpetration. However, this relationship was found to be specific to competitive motives. While prior research have linked gaming motives such as escapism and avoidance to problematic behaviours such as excessive gaming (Akbari et al., 2022; Khan & Muqtadir, 2016; Melodia et al., 2022), the current study found that *diversion* motives were not predictive of cyberbullying behaviour. This highlights the unique role of competitive motives in predicting cyberbullying, as most gaming motives, even those linked to other problematic behaviours, appear benign in this context. One potential explanation is that gaming frequency may account for variance initially attributed to most gaming motives (*challenge*, *diversion*, *fantasy*, *arousal*, *social interaction*). Future research could further examine how gaming motives relate to different problematic behaviours to better inform harm prevention in online gaming.

Limitations

The use of convenience sampling limits generalisability, as the sample was initially recruited through social media, with Prolific participants added at this stage to improve gender balance. While Prolific participants were recruited to improve gender balance in the initial sample, the final analytical sample was skewed towards men, reflecting gender disparities in online gaming participation. It is possible that participants recruited via social media were disproportionately less engaged in online gaming, which may have contributed to the gender imbalance observed in the analytical sample. The recruitment process may have further influenced sample characteristics, as social media participants were self-selected, whereas Prolific participants were recruited from a managed panel with predetermined demographic quotas.

The cross-sectional design limits causal inferences about the relationships between variables. Although the sample was diverse in many respects, it lacked representation of non-binary and gender-diverse individuals due to limited sample size. Additionally, reliance on self-reported data introduces potential biases, such as social desirability or recall errors. Objective measures, such as data from gaming platforms, could provide a more accurate assessment of certain variables.

Further, use of the PEGI 18 rating system to measure violent content may not fully capture the nuances of in-game violence. While all PEGI 18 games in this study were rated at least partially for violent content, some received the rating for additional reasons (e.g., sexual content). Additionally, not all PEGI 18 games emphasize violence, while lower-rated games may still contain violent elements that could contribute to toxic behaviours. For instance, despite being rated PEGI 16, *Counter-Strike* is widely recognized as a violent video game linked to trash-talking (Breuer et al., 2014; Irwin et al., 2021).

Implications and Future Research

Despite limitations, this study identified gender, age, gaming frequency, and competitive motives as risk factors for cyberbullying perpetration in online games, whereas violent content exposure was not found to be a significant predictor. Findings suggest that anti-cyberbullying programs may benefit from promoting cooperative play and de-emphasizing competitive attitudes that encourage aggressive behaviours. One approach could involve team-based achievement systems that reward supportive behaviour among players, encouraging a shift toward collaborative goals. Given the strong association between gaming frequency and cyberbullying, strategies targeting habitual gaming could similarly be effective in mitigating cyberbullying incidents.

For example, incorporating “cool-off” features to encourage breaks, especially for players frequently flagged for aggressive behaviour, could curb impulsive cyberbullying. Furthermore, this study emphasized the need to consider demographic factors, with men more likely to engage in cyberbullying than women, even after accounting for gaming frequency.

Future research could explore whether identification with gaming culture varies significantly between genders and determine how interventions could target social norms within gaming communities that normalize cyberbullying, especially among younger men. Understanding how in-game culture and social dynamics shape player behaviour could offer more targeted strategies for mitigating toxic behaviours in online gaming communities. Additionally, future research could explore how different competitive settings, such as team-based and individual competition, affect cyberbullying behaviours in online gaming, and how motivations for gameplay vary across game genres. Further research is needed to clarify the lack of association between violent content exposure and cyberbullying in online multiplayer games to better understand the potential role of desensitization, and the conditions under which game content influences behaviour.

Conclusion

This study explored the relationships between gaming frequency, exposure to violent content, competitive motives, and demographic factors in predicting cyberbullying perpetration in online games. Findings show frequent gaming as a strong predictor of cyberbullying, emphasizing the association between habitual gaming and aggressive behaviours online. Contrary to expectations, this study found no significant unique association between violent content exposure in online games and cyberbullying perpetration, which may be due to desensitization effects. Consistent with prior expectations, competitive motives were significantly associated with cyberbullying, supporting Social Dominance Theory and suggesting that players motivated by competition may use cyberbullying to assert dominance. Additionally, younger men were more likely to engage in cyberbullying, indicating the need for future research to explore gender-based social norms within gaming communities. Future research could explore the influence of gaming motives on cyberbullying within differing genre contexts and clarify the role of violent content exposure. Finally, findings suggest that anti-bullying efforts should address competitive gaming attitudes and frequent gaming behaviours, especially among younger men.

Author Contribution Y.H. conceptualized the study. All authors developed the research methodology. Y.H. conducted the data analysis and prepared the original draft. All authors contributed to the review and editing of the manuscript. Supervision was provided by E.C. and B.K.

Funding Open Access funding enabled and organized by CAUL and its Member Institutions.

Data Availability The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

Declarations

Competing interests The authors declare no competing interests.

Ethics Approval Ethical Approval to conduct this investigation was provided by the Deakin University Human Research Ethics Committee (DUHREC), under reference number 2018–168, on June 13, 2024.

Consent to Participate Respondents received a plain language statement explaining the study's purpose and provided written consent before commencing the survey.

Consent to Publish Not Applicable.

Open Access This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.

References

- Achuthan, K., Nair, V. K., Kowalski, R., Ramanathan, S., & Raman, R. (2023). Cyberbullying research—Alignment to sustainable development and impact of COVID-19: Bibliometrics and science mapping analysis. *Computers in Human Behavior*, 140, 107566. <https://doi.org/10.1016/j.chb.2022.107566>
- Adachi, P. J. C., & Willoughby, T. (2011). The effect of violent video games on aggression: Is it more than just the violence? *Aggression and Violent Behavior*, 16(1), 55–62. <https://doi.org/10.1016/j.avb.2010.12.002>
- Akbari, M., Seydavi, M., Spada, M. M., Mohammadkhani, S., Jamshidi, S., Jamaloo, A., & Ayatmehr, F. (2022). The Big Five personality traits and online gaming: A systematic review and meta-analysis. *Journal of Behavioral Addictions*, 10(3), 611–625. <https://doi.org/10.1556/2006.2021.00050>
- Anderson, E. L., Steen, E., & Stavropoulos, V. (2017). Internet use and Problematic Internet Use: A systematic review of longitudinal research trends in adolescence and emergent adulthood. *International Journal of Adolescence and Youth*, 22(4), 430–454. <https://doi.org/10.1080/02673843.2016.1227716>
- Ballard, M. E., & Welch, K. M. (2017). Virtual warfare. *Games and Culture*, 12(5), 466–491. <https://doi.org/10.1177/1555412015592473>
- Billieux, J., Van der Linden, M., Achab, S., Khazaal, Y., Paraskevopoulos, L., Zullino, D., & Thorens, G. (2013). Why do you play World of Warcraft? An in-depth exploration of self-reported motivations to play online and in-game behaviours in the virtual world of Azeroth. *Computers in Human Behavior*, 29(1), 103–109. <https://doi.org/10.1016/j.chb.2012.07.021>
- Boldi, A., & Rapp, A. (2022). Commercial video games as a resource for mental health: A systematic literature review. *Behaviour and Information Technology*, 41(12), 2654–2690. <https://doi.org/10.1080/0144929X.2021.1943524>
- Bottino, S. M. B., Bottino, C. M. C., Regina, C. G., Correia, A. V. L., & Ribeiro, W. S. (2015). Cyberbullying and adolescent mental health: Systematic review. *Cadernos De Saude Publica*, 31(3), 463–475. <https://doi.org/10.1590/0102-311X00036114>
- Brand, J. E., & Jervis, J. (2021). *Digital Australia 2022*. Interactive Games & Entertainment Association. <https://www.igea.net>
- Brand, J. E., Jervis, J., Huggins, P. M., & Wilson, T. W. (2019). *Digital Australia 2020*. Interactive Games & Entertainment Association. <https://www.igea.net>
- Breuer, J., Scharnow, M., & Quandt, T. (2014). Tunnel vision or desensitization? *Journal of Media Psychology*, 26(4), 176–188. <https://doi.org/10.1027/1864-1105/a000122>
- Brochado, S., Soares, S., & Fraga, S. (2017). A scoping review on studies of cyberbullying prevalence among adolescents. *Trauma, Violence, & Abuse*, 18(5), 523–531. <https://doi.org/10.1177/1524838016641668>
- Burkhardt, J., & Lenhard, W. (2022). A meta-analysis on the longitudinal, age-dependent effects of violent video games on aggression. *Media Psychology*, 25(3), 499–512. <https://doi.org/10.1080/15213269.2021.1980729>
- Chang, F.-C., Chiu, C.-H., Miao, N.-F., Chen, P.-H., Lee, C.-M., Huang, T.-F., & Pan, Y.-C. (2015). Online gaming and risks predict cyberbullying perpetration and victimization in adolescents. *International Journal of Public Health*, 60(2), 257–266. <https://doi.org/10.1007/s00038-014-0643-x>
- Çimen, İD., Acar, F. B., Şentürk, E., Annaç, N. B., Erarkadaş, M., & Özboduroğlu, A. A. (2024). Cyber victimization, coping methods, and attitudes of the family toward internet use in adolescents applying to the Child and Adolescent Psychiatry Department during the pandemic. *Turkish Journal of Child and Adolescent Mental Health*, 31(1), 62–75. <https://doi.org/10.4274/tjcamh.galenos.2022.92486>
- Cole, D. A., Nick, E. A., & Pulliam, K. A. (2020). Are massively multiplayer online role-playing games healthy or not and why? Preliminary support for a compensatory social interaction model. *Computers in Human Behavior*, 102, 57–66. <https://doi.org/10.1016/j.chb.2019.08.012>
- Cote, A. C. (2017). I can defend myself. *Games and Culture*, 12(2), 136–155. <https://doi.org/10.1177/1555412015587603>
- Coyne, S. M., Warburton, W., Swit, C., Stockdale, L., & Dyer, W. J. (2023). Who is most at risk for developing physical aggression after playing violent video games? An individual differences perspective from early adolescence to emerging adulthood. *Journal of Youth and Adolescence*, 52, 719–733. <https://doi.org/10.1007/s10964-023-01739-0>
- Domahidi, E., Festl, R., & Quandt, T. (2014). To dwell among gamers: Investigating the relationship between social online game use and gaming-related friendships. *Computers in Human Behavior*, 35, 107–115. <https://doi.org/10.1016/j.chb.2014.02.023>
- Espelage, D. L., Rao, M. A., & Craven, R. G. (2013). Theories of cyberbullying. In S. Bauman, D. Cross, & J. Walker (Eds.),

- Principles of cyberbullying research: Definitions, measures, and methodology* (pp. 49–67). Routledge.
- Ferguson, C. J., Rueda, S. M., Cruz, A. M., Ferguson, D. E., Fritz, S., & Smith, S. M. (2008). Violent video games and aggression: Causal relationship or byproduct of family violence and intrinsic violence motivation? *Criminal Justice and Behavior*, 35(3), 311–332. <https://doi.org/10.1177/0093854807311719>
- Fox, J., & Tang, W. Y. (2017). Women's experiences with general and sexual harassment in online video games: Rumination, organizational responsiveness, withdrawal, and coping strategies. *New Media & Society*, 19(8), 1290–1307. <https://doi.org/10.1177/1461444816635778>
- Fox, J., Gilbert, M., & Tang, W. Y. (2018). Player experiences in a massively multiplayer online game: A diary study of performance, motivation, and social interaction. *New Media & Society*, 20(11), 4056–4073. <https://doi.org/10.1177/1461444818767102>
- Fryling, M. (2018). Gender, over sharing, and cyberbullying in online multi-player gaming (MMOG) environments. *Issues in Information Systems*, 19(2), 140–148. https://doi.org/10.48009/2_iis_2018_140-148
- Fryling, M., Cotler, J., Rivituso, J., Mathews, L., & Pratico, S. (2015). Cyberbullying or normal game play? Impact of age, gender, and experience on cyberbullying in multi-player online gaming environments: Perceptions from one gaming forum. *Journal of Information Systems Applied Research*, 8(1), 15–24. <http://jisar.org/2015-8/n1/JISAR.html>
- Gottfried, J., & Sidoti, O. (2024). *Teens and video games*. Pew Research Center. <https://www.pewresearch.org>
- Greitemeyer, T., & Cox, C. (2013). There's no "I" in team: Effects of cooperative video games on cooperative behavior. *European Journal of Social Psychology*, 43(3), 224–228. <https://doi.org/10.1002/ejsp.1940>
- Griffiths, M., Davies, M., & Chappell, D. (2004). Online computer gaming: A comparison of adolescent and adult gamers. *Journal of Adolescence*, 27, 87–96. <https://doi.org/10.1016/j.adolescence.2003.10.007>
- Hidayat, Z., Permatasari, C. B., & Mani, L. A. (2022). Cyber violence and bullying in online game addiction: A phenomenological study. *Journal of Theoretical and Applied Information Technology*, 100(15), 1428–1440. <http://www.jatit.org>
- Hilvert-Bruce, Z., & Neill, J. T. (2020). I'm just trolling: The role of normative beliefs in aggressive behaviour in online gaming. *Computers in Human Behavior*, 102, 303–311. <https://doi.org/10.1016/j.chb.2019.09.003>
- Hou, C.-Y., Rutherford, R., Chang, H., Chang, F.-C., Shumei, L., Chiu, C.-H., Chen, P.-H., Chiang, J.-T., Miao, N.-F., Chuang, H.-Y., & Tseng, C.-C. (2022). Children's mobile-gaming preferences, online risks, and mental health. *PLoS ONE*, 17(12), e0278290. <https://doi.org/10.1371/journal.pone.0278290>
- Huang, C. L., Yang, S. C., & Hsieh, L. S. (2019). The cyberbullying behavior of Taiwanese adolescents in an online gaming environment. *Children and Youth Services Review*, 106, 104461. <https://doi.org/10.1016/j.childyouth.2019.104461>
- Huang, J., Zhong, Z., Zhang, H., & Li, L. (2021). Cyberbullying in social media and online games among Chinese college students and its associated factors. *International Journal of Environmental Research and Public Health*, 18(9), 4819. <https://doi.org/10.3390/ijerph18094819>
- Pan European Gaming Information. (2023). *Two levels of information as a guide: The PEGI age labels*. PEGI. <https://pegi.info/>
- Irwin, S. V., Naweed, A., & Lastella, M. (2021). The mind games have already started: An in-depth examination of trash talking in Counter-Strike: Global Offensive esports using practice theory. *Journal of Gaming & Virtual Worlds*, 13(2), 173–194. https://doi.org/10.1386/jgvw_00035_1
- Jenaro, C., Flores, N., & Frías, C. P. (2018). Systematic review of empirical studies on cyberbullying in adults: What we know and what we should investigate. *Aggression and Violent Behavior*, 38, 113–122. <https://doi.org/10.1016/j.avb.2017.12.003>
- John, A., Glendenning, A. C., Marchant, A., Montgomery, P., Stewart, A., Wood, S., Lloyd, K., & Hawton, K. (2018). Self-harm, suicidal behaviours, and cyberbullying in children and young people: Systematic review. *Journal of Medical Internet Research*, 20(4), e129. <https://doi.org/10.2196/jmir.9044>
- Katz, E., Blumler, J. G., & Gurevitch, M. (1973). Uses and gratifications research. *Public Opinion Quarterly*, 37, 509–523. <https://doi.org/10.1086/268109>
- Kaye, L. S., Hellsten, L. M., McIntyre, L. J., & Hendry, B. P. (2022). 'There's a fine line between trash-talking and cyberbullying': A qualitative exploration of youth perspectives of online gaming culture. *International Review of Sociology*, 32(3), 426–442. <https://doi.org/10.1080/03906701.2022.2133407>
- Khan, A., & Muqtadir, R. (2016). Motives of problematic and non-problematic online gaming among adolescents and young adults. *Pakistan Journal of Psychological Research*, 33(1), 119–138.
- Kou, Y. (2020). Toxic behaviors in team-based competitive gaming: The case of League of Legends. In *CHI PLAY '20: Proceedings of the Annual Symposium on Computer-Human Interaction in Play* (pp. 81–92). Association for Computing Machinery. <https://doi.org/10.1145/3410404.3414243>
- Kowal, M., Conroy, E., Ramsbottom, N., Smithies, T., Toth, A., & Campbell, M. (2021). Gaming your mental health: A narrative review on mitigating symptoms of depression and anxiety using commercial video games. *JMIR Serious Games*, 9(2), e26575. <https://doi.org/10.2196/26575>
- Kowalski, R. M., Limber, S. P., & McCord, A. (2019). A developmental approach to cyberbullying: Prevalence and protective factors. *Aggression and Violent Behavior*, 45, 20–32. <https://doi.org/10.1016/j.avb.2018.02.009>
- Kowalski, R. M., Giumetti, G. W., Schroeder, A. N., & Reese, H. H. (2012). Cyber bullying among college students: Evidence from multiple domains of college life. In C. Wankel & L. A. Wankel (Eds.), *Cutting-edge technologies in higher education* (Vol. 5, pp. 293–321). Emerald Group Publishing. [https://doi.org/10.1108/S2044-9968\(2012\)0000005016](https://doi.org/10.1108/S2044-9968(2012)0000005016)
- Kuss, D. J., Kristensen, A. M., Williams, A. J., & Lopez-Fernandez, O. (2022). To be or not to be a female gamer: A qualitative exploration of female gamer identity. *International Journal of Environmental Research and Public Health*, 19(3), 1169. <https://doi.org/10.3390/ijerph19031169>
- Kwak, H., spsamps Blackburn, J. (2015). Linguistic analysis of toxic behavior in an online video game. In: Aiello, L., McFarland, D. (eds) *Social Informatics, SocInfo 2014, Proceedings* (Lecture Notes in Computer Science, Vol. 8852, pp. 209–217). Springer. https://doi.org/10.1007/978-3-319-15168-7_26
- Kwan, I., Dickson, K., Richardson, M., MacDowall, W., Burchett, H., Stansfield, C., Brunton, G., Sutcliffe, K., & Thomas, J. (2020). Cyberbullying and children and young people's mental health: A systematic map of systematic reviews. *Cyberpsychology, Behavior, and Social Networking*, 23(2), 72–82. <https://doi.org/10.1089/cyber.2019.0370>
- Lam, L. T., Cheng, Z., & Liu, X. (2013). Violent online games exposure and cyberbullying/victimization among adolescents. *Cyberpsychology, Behavior, and Social Networking*, 16(3), 159–165. <https://doi.org/10.1089/cyber.2012.0087>
- Leung, A. N., & McBride-Chang, C. (2013). Game on? Online friendship, cyberbullying, and psychosocial adjustment in Hong Kong Chinese children. *Journal of Social and Clinical Psychology*, 32(2), 159–185. <https://doi.org/10.1521/jscp.2013.32.2.159>

- Li, Y. (2022). Linking violent video games to cyberaggression among college students: A cross-sectional study. *Aggressive Behavior*, 48(2), 241–252. <https://doi.org/10.1002/ab.22002>
- Li, Q., & Pustaka, A. (2017). When cyberbullies meet gamers: What do young adults think? *Educational Research*, 59(4), 426–443. <https://doi.org/10.1080/00131881.2017.1369857>
- Lisón, J. F., Cebolla, A., Guixeres, J., Álvarez-Pitti, J., Escobar, P., Bruñó, A., Lurbe, E., Alcañiz, M., & Baños, R. (2015). Competitive active video games: Physiological and psychological responses in children and adolescents. *Paediatrics & Child Health*, 20(7), 373–376. <https://doi.org/10.1093/pch/20.7.373>
- López-Fernández, F. J., Mezquita, L., Etkin, P., Griffiths, M. D., Ortet, G., & Ibáñez, M. I. (2021). The role of violent video game exposure, personality, and deviant peers in aggressive behaviors among adolescents: A two-wave longitudinal study. *Cyberpsychology, Behavior, and Social Networking*, 24(1), 32–40. <https://doi.org/10.1089/cyber.2020.0030>
- Mathur, M. B., & VanderWeele, T. J. (2019). Finding common ground in meta-analysis “wars” on violent video games. *Perspectives on Psychological Science*, 14(4), 705–708. <https://doi.org/10.1177/1745691619850104>
- Mattinen, T., & Macey, J. (2018). Online abuse and age in *Dota 2*. In *Proceedings of the 22nd International Academic Mindtrek Conference* (pp. 69–78). ACM. <https://doi.org/10.1145/3275116.3275149>
- McInroy, L. B., & Mishna, F. (2017). Cyberbullying on online gaming platforms for children and youth. *Child and Adolescent Social Work Journal*, 34(6), 597–607. <https://doi.org/10.1007/s10560-017-0498-0>
- McLean, L., & Griffiths, M. D. (2019). Female gamers’ experience of online harassment and social support in online gaming: A qualitative study. *International Journal of Mental Health and Addiction*, 17(4), 970–994. <https://doi.org/10.1007/s11469-018-9962-0>
- Melodia, F., Canale, N., & Griffiths, M. D. (2022). The role of avoidance coping and escape motives in problematic online gaming: A systematic literature review. *International Journal of Mental Health and Addiction*, 20(2), 996–1022. <https://doi.org/10.1007/s11469-020-00422-w>
- Pallavicini, F., Pepe, A., & Mantovani, F. (2022). The effects of playing video games on stress, anxiety, depression, loneliness, and gaming disorder during the early stages of the COVID-19 pandemic: PRISMA systematic review. *Cyberpsychology, Behavior, and Social Networking*, 25(6), 334–354. <https://doi.org/10.1089/cyber.2021.0252>
- Raith, L., Bignill, J., Stavropoulos, V., Millea, P., Allen, A., Stallman, H. M., Mason, J., De Regt, T., Wood, A., & Kannis-Dymland, L. (2021). Massively multiplayer online games and well-being: A systematic literature review. *Frontiers in Psychology*, 12, 698799. <https://doi.org/10.3389/fpsyg.2021.698799>
- Schott, G. R., & Horrell, K. R. (2000). Girl gamers and their relationship with the gaming culture. *Convergence*, 6(4), 36–53. <https://doi.org/10.1177/135485650000600404>
- Shao, R., & Wang, Y. (2019). The relation of violent video games to adolescent aggression: An examination of moderated mediation effect. *Frontiers in Psychology*, 10, 384. <https://doi.org/10.3389/fpsyg.2019.00384>
- Sherry, J. L., Greenberg, B. S., Lucas, K., & Lachlan, K. A. (2006). Video game uses and gratifications as predictors of use and game preference. In P. Vorderer & J. Bryant (Eds.), *Playing video games: Motives, responses, and consequences* (pp. 213–224). Lawrence Erlbaum Associates.
- Smith, P. K., Mahdavi, J., Carvalho, M., Fisher, S., Russell, S., & Tippett, N. (2008). Cyberbullying: Its nature and impact in secondary school pupils. *Journal of Child Psychology and Psychiatry*, 49(4), 376–385. <https://doi.org/10.1111/j.1469-7610.2007.01846.x>
- Statista (2024a) *Number of video game users worldwide from 2019 to 2029 (in billions)* [Graph]. In Statista. Available at: <https://www.statista.com/statistics/748044/number-video-gamers-world/> (accessed 16 February 2025).
- Statista (2024b) *Number of digital video game users worldwide from 2017 to 2027, by segment (in billions)* [Graph]. In Statista. <https://www-statista-com/forecasts/456610/video-games-users-in-the-world-forecast> (accessed 16 February 2025).
- Statista (2024c) *Distribution of video game users in the United States as of June 2024, by gender*. In Statista. Available at: <https://www-statista-com/forecasts/494867/distribution-of-gamers-by-gender-usa> (accessed 5 September 2024).
- Sublette, V. A., & Mullan, B. (2012). Consequences of play: A systematic review of the effects of online gaming. *International Journal of Mental Health and Addiction*, 10(1), 3–23. <https://doi.org/10.1007/s11469-010-9304-3>
- Tang, W. Y., & Fox, J. (2016). Men’s harassment behavior in online video games: Personality traits and game factors. *Aggressive Behavior*, 42(6), 513–521. <https://doi.org/10.1002/ab.21646>
- Tang, W. Y., Reer, F., & Quandt, T. (2020). Investigating sexual harassment in online video games: How personality and context factors are related to toxic sexual behaviors against fellow players. *Aggressive Behavior*, 46(1), 127–135. <https://doi.org/10.1002/ab.21873>
- Tanrikulu, I., & Erdur-Baker, Ö. (2021). Motives behind cyberbullying perpetration: A test of uses and gratifications theory. *Journal of Interpersonal Violence*, 36(13–14), NP6699–NP6724. <https://doi.org/10.1177/0886260518819882>
- Tippett, N., & Kwak, K. (2012). Cyberbullying in South Korea. In Q. Li, D. Cross, & P. K. Smith (Eds.), *Cyberbullying in the global playground: Research from international perspectives* (pp. 202–219). Wiley-Blackwell. <https://doi.org/10.1002/9781119954484.ch10>
- Trudgett-Klose, L. H., & McLinton, S. S. (2024). “Pro Gamers” & cyberbullying: Workplace bullying & sexual harassment in professional video gaming. *Entertainment Computing*, 50, 100702. <https://doi.org/10.1016/j.entcom.2024.100702>
- Waechter, N., & Meschik, M. (2023). Peer socialization of male adolescents in digital games: Achievement, competition, and harassment. *Communications*, 48(4), 457–481. <https://doi.org/10.1515/commun-2021-0079>
- Wong, S., & Ratan, R. (2024). How does exposure to general and sexual harassment relate to female gamers’ coping strategies and mental health? *Games and Culture*, 19(5), 670–689. <https://doi.org/10.1177/15554120231177600>
- Ybarra, M. L., Diener-West, M., & Leaf, P. J. (2007). Examining the overlap in Internet harassment and school bullying: Implications for school intervention. *Journal of Adolescent Health*, 41(6 Suppl), S42–S50. <https://doi.org/10.1016/j.jadohealth.2007.09.004>
- Zsila, Á., Shabahang, R., Aruguete, M. S., & Orosz, G. (2022). Toxic behaviors in online multiplayer games: Prevalence, perception, risk factors of victimization, and psychological consequences. *Aggressive Behavior*, 48(3), 356–364. <https://doi.org/10.1002/ab.22023>

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.